Revised Total Coliform Rule

COVID-19
Alternative Sampling Protocol
for RTCR Monitoring

Kansas
Department of Health
and Environment

Bureau of Water, Public Water Supply Section

Effective March 23, 2020

Public Water Supply Section Chief — Date: 3/23/2020

Compliance and Data Management Unit Chief — Date: 3/23/2020

The purpose of this document is to address sampling alternatives that a public water supply system (PWS) might use if normal monitoring activity is disrupted by the COVID-19 pandemic. Although these situations may be handled on a case-by-case basis, this alternative protocol for coliform sampling may be deployed in the event the COVID-19 pandemic has affected normal procedures.

This Policy applies only to COVID-19 pandemic related disruptions. All public water supply systems should continue routine drinking water monitoring according to their regular schedules. If coliform samples are not obtained, the PWS may be placed on a Boil Water Advisory until monitoring indicates the system is no longer at risk of bacterial contamination.

The Revised Total Coliform Rule (RTCR) applies to all PWS systems in Kansas. In addition, PWS systems are required by state regulation K.A.R. 28-15-19(a) to disinfect all drinking water provided to the public. To evaluate the effectiveness of the disinfection method used, all systems are required by state regulation (K.A.R. 28-15a-21) to submit monthly water samples from distribution taps for total coliform testing. Total coliform testing is used as an indicator for the presence of other bacteriological contaminants (E. coli). PWS systems that have total coliform detects are required to perform assessments to identify possible sanitary defects and to take appropriate action to correct them.

The number of samples required to be collected each month depends on water source type and population served. Failure to collect the required number of samples each month will result in a monitoring violation and may result in a Boil Water Advisory or Do Not Drink Order for the entire water system. The Number of samples required by population group (page-8) and detailed directions for proper collection of samples (page-11) may be found in the Public Water Supply Survival Guide For the Revised Total Coliform Rule on the KDHE website at: http://www.kdheks.gov/pws/documents/Total_Coliform_Rule_Survival_Guide.pdf

PWS systems should plan and implement additional training of alternate or backup personnel as needed to prepare for situations created by COVID-19. Those situations include but are not limited to critical staff or certified operator becoming unavailable to collect samples, or a sampling site becoming unavailable for monitoring. Persons collecting samples do not need to be a certified operator but should have basic training on how to properly collect coliform samples and take chlorine residual readings. Operating activities that must be done daily, weekly, and monthly or monitoring for acute health contaminants like coliform bacteria (E. Coli) and nitrates should be given top priority in the training process.

The standard directions for collection of total coliform drinking water samples discussed below should be followed until a water system is unable to access an adequate number of representative sample sites. The system may then elect to follow an alternate collection procedure outlined below.

Note: The sampler must remember to take a chlorine residual reading in conjunction with the coliform sample. The chlorine residual should be taken prior to collecting the coliform sample to assure that adequate flushing of plumbing has occurred.

Standard Protocol for Collection of Total Coliform Drinking Water Samples

1. Use only sterile bottles furnished by the laboratory. Keep bottles sealed until used.

2. Collect samples from rigid faucets when possible. Do not collect from: water softeners, charcoal filters, yard hydrants, fire hydrants, frost-free hydrants, leaking faucets, hot water faucets or sill cocks. Try to avoid swing or swivel faucets or single handle faucets whenever possible.

3. Do not collect all samples from the same site unless there is only one service connection in your system.

4. Remove any aerator or filters from faucet if possible before sampling.

5. Wash hands before beginning sampling procedures. Run the water at a steady rate (so it doesn't splash out of the bottle) for 3 to 5 minutes before sampling. Do not adjust flow.

6. Take a chlorine residual reading in conjunction with the coliform sample. The chlorine residual should be taken prior to collecting the coliform sample to assure that adequate flushing of plumbing has occurred.

7. Remove the bottle lid just before filling. Do not rinse preservative (powder or liquid) out of the bottle. Holding the lid in your free hand, fill the bottle to between the 100 milliliter (mL) line and 120 mL line without letting the water splash out or overflow the bottle. Then replace the lid and tighten securely. Dry the outside of the bottle before packing.

8. PWS Systems using the Kansas Health and Environmental Laboratories (KHEL) should: **fill out the information on the sample submission form making sure the barcode numbers on the sample card and the sample bottle are the same.** Print the collection information neatly with blue or black pen (NOT PENCIL). All information must be filled in to be a valid sample.

    a. Collection date
    b. Collector's first and last name
    c. Time of collection (military time, 24-hour clock, or include a.m. or p.m.)
    d. Collection location (brief name, address, or site zone and number)
    e. Chlorine residual (circle "Free", or "Total" if combined) (REQUIRED to be recorded with total coliform samples for determining MRDL under the DBP Rule)
    f. Comments of any observations that would be helpful

PWS Systems using a private laboratory should follow the instructions provided with the sample bottles.

EPA test methods require calculation of holding time to be the time between sample collection and sample analysis and must not exceed 30 hours.

9. Collection of the sample in the afternoon may reduce the holding time. The holding time (from sample collection to initiation of analysis) must not exceed 30 hours. Collect and ship routine samples on Monday, Tuesday, or Wednesday unless there is a holiday in the week. Avoid having the samples arrive at the laboratory on weekends or holidays.

10. Collect and return a sample in each bottle received for your water system. Samples not collected during a month will result in a monitoring violation and may result in a Boil Water Advisory or Do Not Drink Order being issued.

11. Three repeat samples are required to be collected if there has been a total or fecal coliform positive result; one at the original positive location, one within five connections upstream, and one within five connections downstream.

12. A replacement sample is required for every rejected sample.

13. Failure to return REPEAT or REPLACEMENT samples will result in monitoring violations.

14. The reason for the return of empty sample bottles must be included in the comments section of the sample form or a monitoring violation will result.

15. If you have questions about reports or procedures, please call your laboratory.

Alternate Sampling Locations and Protocols Due to Disruption Caused by COVID-19 Pandemic

Water systems should continue to follow their approved monitoring plan for as long as possible. However, if routine sample sites become unavailable due to the COVID-19 pandemic KDHE will temporarily allow for relocation of coliform sample sites to protect the health of both customers at the sampling location and water system staff.

A water system should, whenever possible, make contact by phone with persons at designated sampling sites to ensure entry is safe prior to arriving at a sampling event to minimize potential exposure to COVID-19 (See Attachment A).

If a sampling site from the approved sampling plan becomes unavailable, the first option should be to select an alternate sampling site, as close to the approved site as possible, preferably not more than 5 service connections on either side from the approved site. The sampler shall document the actual address, faucet from which the sample was collected and a brief reason for the relocated sample on the laboratory sample form.

Other alternate sampling procedures to consider in extreme "worst case" scenarios may include allowing customers to collect samples or PWS personnel sampling from outside sill cocks, spigots or garden hydrants. Both situations should only be deployed in extreme cases and would require additional disinfecting, flushing measures and additional training. The measures listed below will only be authorized by KDHE as a temporary alternate during the COVID-19 pandemic. Note: additional sampling is required following a total coliform positive sample result.

KDHE recommends the use of personal protection such as disposable gloves and disinfection wipes to prevent possible passing of bacteria and/or viruses between customer and public water supply staff.

A. Customer Collected Samples

Water Systems may elect to have a customer at a routine sample location collect a water sample for coliform testing. This procedure would require training the customer on proper techniques to avoid sample contamination due to mishandling the container or lid. The customer should be identified on the chain of custody and/or sample collection form as well as the person who receives the sample on behalf of the water system.

B. Sampling from Outdoor Sill Cocks, Spigots or Garden Hydrants

Improper disinfection of outdoor faucets/spigots can lead to additional costs for re-sampling due to coliform positives from bacteria in or on the faucet. Therefore, it's important that disinfection is performed carefully and adequately. Faucets with leaking handle packing should not be sampled. **Fire hydrants shall not to be used for coliform sampling.**

Recommended Disinfectants

- Ethyl alcohol greater than 60% or Isopropyl alcohol (rubbing alcohol) of greater than 70% by volume may be used to disinfect a sampling spigot. Both require a contact time of at least 1 minute before flushing. Availability of alcohol disinfectant may be limited due to stockpiling during a pandemic.
- Sodium hypochlorite (Bleach) 5.25-6.15% sodium hypochlorite or greater may be used to disinfect a sampling spigot but requires adequate contact time before flushing (approximately 5 minutes). If 12% sodium hypochlorite is used, it should be diluted with equal parts of distilled or fresh tap water. Contact time should be observed before flushing. Eye and skin protection should be worn. Vapors can cause eye, sinus and throat irritation and or burns. Fresh mixtures should be used daily to avoid degradation of disinfectant.
- KDHE does not recommend the use of only pre-packaged disinfecting wipes on threaded fittings due to the inability to assure contact in hard to reach locations or inside surfaces of faucet. However, use of wipes to initially clean dirt and other debris from surfaces prior to disinfection is an acceptable use.
- KDHE does **not** recommend nor condone the use of heat/flame sterilization due to possible damage to faucet seals, potential burns to sampling personnel and risk of fire.

Recommended Disinfection Procedure of Outside Faucets

- Remove any hose, aerator, splitter, timer or other attachments from faucet. Clean any visible dirt, grime or other obvious possible contaminant from faucet and handle.
- Use Nalgene-type (squeeze bottle that can be used upside down) with one of the above recommended disinfectants. Squirt inside and outside of faucet/spigot to assure complete surface coverage and wait for adequate contact time for disinfectant used then turn on faucet and flush with steady stream of water for no less than 5 minutes. More time may be needed if service line length and size warrant additional flushing to obtain a representative sample.
- Be careful not to allow water or mud splashing back onto faucet as this will be a source for bacterial contamination.
- After flushing, without turning water off, slow flow to small stream, then follow the Standard Directions for Collection of Total Coliform Drinking Water Samples outlined above in this document.
- If Sodium Hypochlorite was used as disinfectant, following sampling, rinse all metal components with water to prevent corrosion.

Sampling Techniques, Training Videos and Procedure Guides:

Note: Number of samples required in EPA documents may differ from Kansas Statute requirements.

Public Water Supply Survival Guide for the Revised Total Coliform Rule
http://www.kdheks.gov/pws/documents/Total_Coliform_Rule_Survival_Guide.pdf

AWWA coliform sampling Video Link:
https://www.youtube.com/watch?v=yvyk_M7ah3c

EPA Quick Guide To Drinking Water Sample Collection:
https://www.epa.gov/sites/production/files/documents/samplingprocedures.pdf

EPA Quick Guide to Drinking Water Sample Collection, 2nd Edition:
https://www.epa.gov/sites/production/files/2015-11/documents/drinking_water_sample_collection.pdf

Sampling and Testing Potable (drinking) Water:
https://www.fs.fed.us/eng/pubs/pdf/waterguide/hi_res/sampling.pdf

WHO - Infection Prevention and Control of Epidemic and Pandemic-Prone Acute Respiratory Infections in Health Care:
https://www.ncbi.nlm.nih.gov/books/NBK214359/pdf/Bookshelf_NBK214359.pdf

Can the Novel Coronavirus spread through drinking water?

According to the CDC, the novel coronavirus has not been detected in drinking water. Conventional water treatment methods that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19.

All Kansas public water supply systems are required to maintain an adequate chlorine residual in the distribution system. Chlorine is effective in controlling coronavirus in drinking water.

If you have questions, please call KDHE Public Water Supply Section at 785-296-5514.

Attachment A

Guidance for Water Operators Scheduling and Entering Monitoring Locations

PWS system personnel should practice self-care, personal hygiene, and social distancing. Follow your utility's workplace policies and general guidance that includes staying home if you are sick, washing hands regularly for a least 20 seconds with soap and water, and covering coughs and sneezes (in the arm/elbow).

At the time of scheduling a sampling event, assess the occupant's situation by asking the following questions.

- Has there been travel within the last 14 days in a state or country identified as a hot-spot?
- Has there been any exposure to an individual diagnosed with COVID-19?
- Is anyone at the sample site location showing signs of illness including:
    - A fever greater than 100 degrees;
    - Cough; and/or
    - Shortness of breath

<u>If the answer to any of these questions is yes OR the occupant prefers not to have PWS system personnel enter the building, the sampler should select an alternate site.</u>

<u>If there are no indications of risk/illness proceed with the sampling event, as long as the occupant is comfortable doing so.</u>

- Reassess risk by asking the same questions at the time of arrival and before entering the sample site location. If the answer to any question is yes, act as directed above.
- Don't shake hands or touch others when greeting or interacting.
- PWS personnel should wear disposable gloves while sampling.
- Wash your hands frequently and use hand sanitizer when soap and water aren't available.
- Limit unnecessary contact with surfaces/items and avoid shared use of equipment. Regularly wipe down all items used.
- Follow the current COVID-19 guidance to protect yourself and those you come in contact with.